



MI FluFocus

Influenza Surveillance and Avian Influenza Update

Bureau of Epidemiology
Bureau of Laboratories



Editor: Susan Peters, DVM
Surveillance and Infectious Disease Epidemiology
PetersS1@Michigan.gov

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New updates in this issue:

- **Michigan Surveillance:** Influenza activity continues to rise at a slow, steady pace.
 - **National Surveillance:** Activity remains elevated; 27 states report widespread activity.
 - **International Surveillance:** Influenza activity continues to increase in the temperate regions.
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******2009 Influenza A (H1N1) virus Updates******

On August 17 and September 18, MDCH released guidance for healthcare providers, laboratorians and public health personnel regarding appropriate patients for influenza testing at the MDCH lab and reporting of influenza hospitalizations and deaths. The guidance is available at www.michigan.gov/h1n1flu.

Please continue to reference the State of Michigan's novel 2009 influenza A (H1N1) website at www.michigan.gov/h1n1flu and the MDCH influenza website at www.michigan.gov/flu for additional information. Local health departments can find guidance documents in the MI-HAN document library. In addition to the previous websites, additional laboratory-specific information is located at the Bureau of Laboratories H1N1 page at http://www.michigan.gov/mdch/0,1607,7-132-2945_5103-213906--,00.html.

International (WHO Pandemic H1N1 2009 update 68 [edited], October 2): As of 27 September 2009, worldwide there have been more than 340,000 laboratory confirmed cases of pandemic influenza H1N1 2009 and over 4100 deaths reported to WHO. As many countries have stopped counting individual cases, particularly of milder illness, the case count is significantly lower than the actual number of cases that have occurred. WHO is actively monitoring the progress of the pandemic through frequent consultations with the WHO Regional Offices and member states and through monitoring of multiple sources of data.

Transmission of influenza virus and rates of influenza-like-illness (ILI) continue to increase in the temperate regions of the northern hemisphere. In North America, influenza transmission is geographically widespread and continues to increase. Levels of ILI have continued to increase and remain above the seasonal baseline for the past 4 weeks in most regions of the United States. In Mexico, a high intensity of respiratory diseases has been reported for two consecutive weeks (week 37 - 38), with large increases in cases being reported in the north and northwest of the country. In Europe and Central and Western Asia, although overall influenza activity remains low an increase in transmission has been noted in a number of countries and continues to intensify in others. Rates of influenza-like-illness continue to be above baseline levels in Ireland, parts of the United Kingdom (Northern Ireland), Israel, and France; in addition, more than 10 other countries in the region have reported geographically localized spread of influenza. In Japan, influenza activity has continued to increase above the seasonal epidemic threshold since week 33. These increases in ILI activity have been accompanied by increases in laboratory isolations of pandemic influenza H1N1 2009 in most of these areas.

In the tropical regions of the Americas and Asia, influenza transmission remains active but the trends in respiratory diseases activity are mixed. Although respiratory disease activity is geographically regional to widespread throughout the tropical region of the Americas, many countries have been recently reporting a declining trend (Bolivia, Brazil, Costa Rica, El Salvador, Panama, Paraguay, Venezuela), while others recently reported an increasing trend (Columbia and Cuba). In tropical regions of Asia, there continues to be an increasing trend in respiratory diseases in parts of India and in Cambodia, while other countries in the Southeast Asia have been recently reporting declining transmission.

In the temperate regions of the southern hemisphere, influenza transmission has largely returned to baseline (Chile, Argentina, and New Zealand) or has declined substantially (Australia and South Africa).

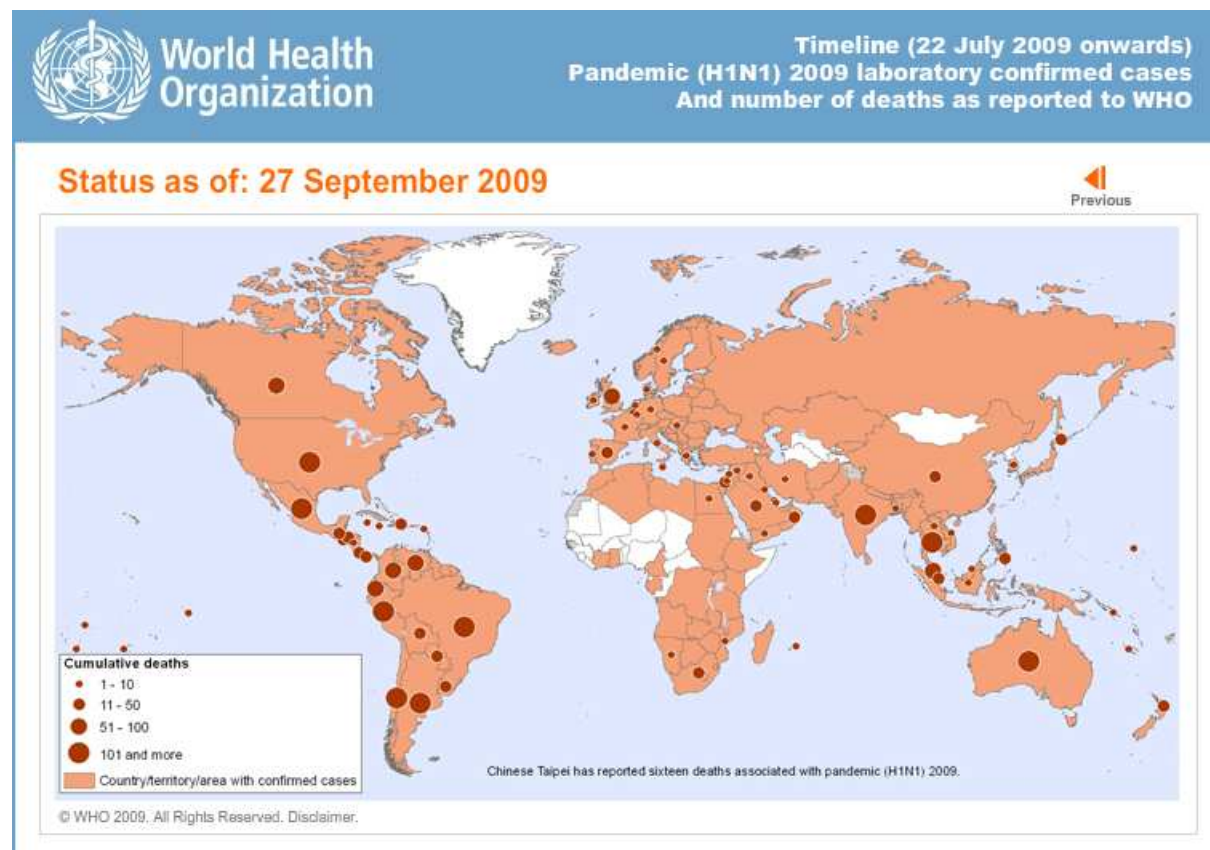
All pandemic H1N1 2009 influenza viruses analyzed to date have been antigenically and genetically similar to A/California/7/2009-like pandemic H1N1 2009 virus.

Systematic surveillance conducted by the Global Influenza Surveillance Network (GISN), supported by WHO Collaborating Centres and other laboratories, continues to detect sporadic incidents of H1N1 pandemic viruses that show resistance to the antiviral oseltamivir. To date, 28 resistant pandemic H1N1 influenza viruses have been detected and characterized worldwide. All of these viruses show the same H275Y mutation that confers resistance to the antiviral oseltamivir, but not to the antiviral zanamivir. No new resistant pandemic H1N1 influenza viruses have been officially reported to WHO during the past week. Worldwide, more than 10,000 clinical specimens (samples and isolates) of the pandemic H1N1 virus have been tested and found to be sensitive to oseltamivir.

Laboratory-confirmed cases of pandemic (H1N1) 2009 as officially reported to WHO by States Parties to the IHR (2005) as of 27 September 2009: No new countries and overseas territories /communities have newly reported their first confirmed case(s) since the last update (No. 67).

Region	Cumulative total	
	as of 27 September 2009	
	Cases*	Deaths
WHO Regional Office for Africa (AFRO)	8352	42
WHO Regional Office for the Americas (AMRO)	137147	3020
WHO Regional Office for the Eastern Mediterranean (EMRO)	12008	74
WHO Regional Office for Europe (EURO)	Over 56000	At least 176
WHO Regional Office for South-East Asia (SEARO)	33594	413
WHO Regional Office for the Western Pacific (WPRO)	96197	383
Total	Over 343298	At least 4108

*Given that countries are no longer required to test and report individual cases, the number of cases reported actually understates the real number of cases.



Influenza Surveillance Reports

Ed. Note: The 2009-2010 influenza season will begin on October 4, 2009. Influenza data will be reset at that time, except for influenza hospitalizations and deaths, which will be reported from September 1, 2009 per CDC guidance.

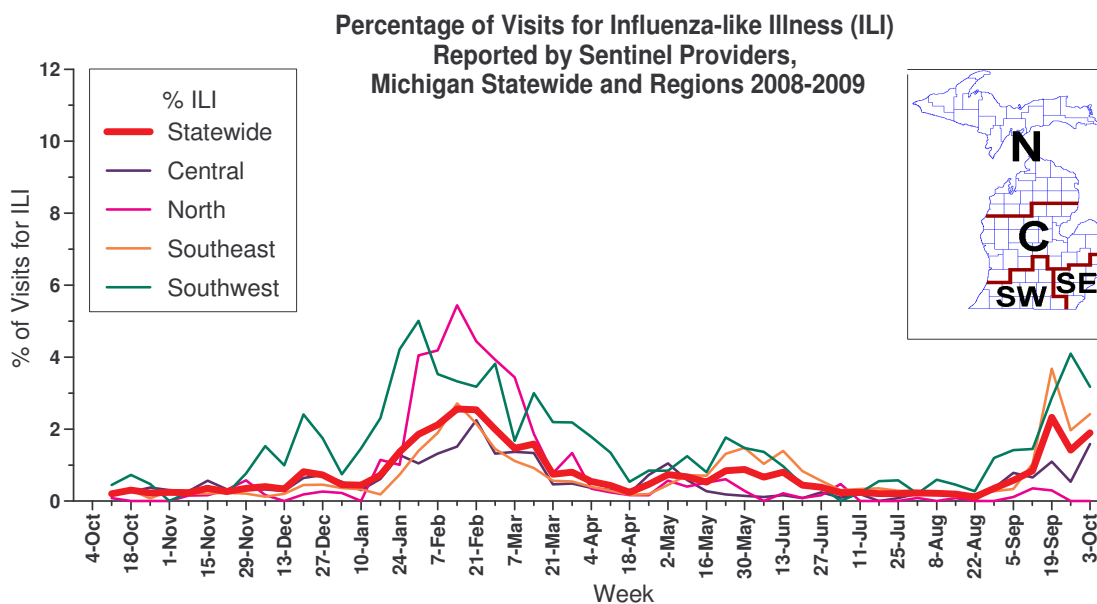
Michigan Disease Surveillance System: The week ending October 3 saw both aggregate flu-like numbers and individual influenza reports decrease slightly. Novel influenza reports increased over the previous week's numbers. Aggregate numbers are consistent with numbers seen this time last year, while individual and novel influenza reports are higher.

During the week of September 27 – October 3, 2009, 7426 cases of flu-like illness and confirmed and probable cases of seasonal and novel influenza were reported in Michigan. 7 hospitalizations and 1 death associated with influenza were also reported. This report is updated every Tuesday by 5:00 pm and can be accessed at a link on this website: <http://www.michigan.gov/h1n1flu>.

Emergency Department Surveillance: Emergency department visits from both constitutional and respiratory complaints increased compared to the previous week's levels. Both constitutional and respiratory numbers are slightly higher than numbers seen at this time last year. Ten constitutional alerts in the C(4), SE(2) and SW(4) Influenza Surveillance Regions and seven respiratory alerts in the C(2), N(1), SE(2) and SW(2) Influenza Surveillance Regions were generated last week.

Over-the-Counter Product Surveillance: Overall, OTC product sales were mixed last week. Chest rubs continued to see a slight increase over the previous week's levels. The remainder of the indicator sales remained near last week's numbers. The indicator levels are comparable to those seen at this time last year with the exception of thermometers, which is slightly higher.

Sentinel Provider Surveillance (as of October 8): During the week ending October 3, 2009, the proportion of visits due to influenza-like illness (ILI) increased compared to the previous week at 1.9% overall; 172 patient visits due to ILI were reported out of 9,052 office visits. Twenty-six sentinel sites provided data for this report. Activity increased in two surveillance regions: Central (1.6%) and Southeast (2.4%); remained the same in the North (0.0%) region and decreased in the Southwest (3.2%). For those that reported, the mean ILI percent in Student Health Centers (n=8) was 3.6%; and the mean ILI percent in Pediatrics (n=5) and Family Practice sites (n=8) was 1.4%. Please note that these rates may change as additional reports are received.



As part of pandemic influenza surveillance, CDC and MDCH highly encourage year-round participation from all sentinel providers. New practices are encouraged to join the sentinel surveillance program today! Contact Cristi Carlton at 517-335-9104 or CarltonC2@michigan.gov for more information.

Laboratory Surveillance (as of October 8): During the past week, no new seasonal influenza isolates were identified at the MDCH Bureau of Laboratories. For the 2008-2009 season, MDCH BOL has identified 320 seasonal influenza isolates (followed by Influenza Surveillance Regions of origin):

- 189 A/H1N1 or A/H1 (63SE, 43SW, 26C, 57N)
- 12 A/H3N2 or A/H3 (5SE, 3SW, 1C, 3N)
- 119 B (24SE, 45SW, 14C, 36N)
 - 9 B/Florida/4/2006-like (4SE, 1SW, 1C, 3N)
 - 108 B/Malaysia/2506/2004-like (20SE, 43SW, 12C, 33N)

- 1 untypable (SW)
- 1 pending subtyping (C)

12 sentinel labs reported for the week ending October 3, 2009. 2 labs reported increasing influenza A positives (SW), 6 labs had steady or sporadic A positives (SE, SW, C, N), and 4 labs saw zero A positives (C, N). 2 labs reported sporadic influenza B positives (SE); 10 labs had zero B positives (SE, SW, C, N).

Michigan Influenza Antigenic Characterization (as of October 8): 38 influenza seasonal A/H1N1 isolates have been antigenically characterized by the CDC; results indicate all seasonal isolates are A/Brisbane/59/2007-like, which matches the influenza A/H1N1 component of this season's Northern Hemisphere vaccine. 2 influenza A/H3N2 isolates has been characterized as A/Brisbane/10/2007-like, which matches the A/H3N2 component of this season's vaccine.

11 Michigan pandemic influenza A (H1N1) specimens have been antigenically characterized by the CDC; all have been characterized as A/California/07/2009-like (H1N1)v. This strain is the variant reference virus selected by WHO as a potential candidate for pandemic influenza A(H1N1) vaccine.

20 influenza B isolates have been antigenically characterized by the CDC. 3 influenza B isolates have been characterized as B/Florida/4/2006-like, which matches the influenza B component of this season's vaccine. 17 influenza B isolates have been characterized as B/Brisbane/60/2008-like, which does not match this season's vaccine, but is a recommended component of the 2009-2010 vaccine.

Michigan Influenza Antiviral Resistance Data (as of October 8): 39 influenza seasonal A/H1N1 viruses from the MDCH Bureau of Laboratories have been tested for antiviral resistance at CDC for the 2008-2009 season. All 39 viruses were resistant to oseltamivir (Tamiflu®) and sensitive to zanamivir, amantadine and rimantadine. These viruses were collected in the SE(15), SW(13), C(3) and N(8) Influenza Surveillance Regions. 4 influenza A/H3N2 isolates, collected in the C(2) and N(2) Regions, have been tested for antiviral resistance; these viruses were resistant to the adamantanes (amantadine and rimantadine) and sensitive to oseltamivir and zanamivir.

8 Michigan pandemic influenza A (H1N1) specimens have been evaluated by CDC for resistance to the adamantane class of antiviral medications; all specimens were resistant. 6 specimens were evaluated for resistance to oseltamivir and zanamivir; all were sensitive to these antivirals. For information about antiviral susceptibility for swine-origin influenza A (H1N1), go to <http://www.cdc.gov/h1n1flu/antiviral.htm>.

19 influenza B isolates, collected in the SE(8), SW(2), C(1) and N(5) Regions, have been tested for antiviral resistance; these viruses were sensitive to oseltamivir and zanamivir (the adamantanes are not effective against B viruses).

Antiviral resistance testing often takes several weeks to complete, and thus cannot be used to guide treatment of individual patients. However, CDC has made interim recommendations regarding the use of antiviral medications for the treatment of influenza and for prophylaxis. This guidance is available at <http://www2a.cdc.gov/HAN/ArchiveSys/ViewMsgV.asp?AlertNum=00279>.

Seasonal Influenza-Associated Pediatric Mortality (as of October 8): Three influenza-associated pediatric mortalities (1 influenza A (SW), 2 influenza B (SE)) have been reported to MDCH for the 2008-2009 influenza season.

***The CDC has asked all states to collect information on any pediatric death associated with influenza infection. This includes not only any death in a child (<18 years) resulting from a compatible illness confirmed to be influenza by an appropriate diagnostic test, but also any unexplained death with evidence of an infectious process in a child. Please immediately call MDCH to ensure that proper clinical specimens are obtained. View the complete MDCH protocol online at http://www.michigan.gov/documents/mdch/ME_pediatric_influenza_guidance_v2_214270_7.pdf.

Influenza Congregate Settings Outbreaks (as of October 8): Three congregate setting outbreaks (1C, 2N) due to seasonal influenza (1 influenza A, 1 influenza B, 1 unsubtyped) have been reported to MDCH for the 2008-09 influenza season.

6 congregate setting outbreaks in Michigan associated with pandemic influenza A H1N1 have been reported to MDCH (1SE, 3SW, 1C, 1N).

National (CDC [edited], October 2): During week 38 (September 20-26, 2009), influenza activity remained elevated in the U.S. 2,126 (22.8%) specimens tested by U.S. World Health Organization (WHO) and National Respiratory and Enteric Virus Surveillance System (NREVSS) collaborating laboratories and reported to CDC/Influenza Division were positive for influenza. 99% of all subtyped influenza A viruses being reported to CDC were 2009 influenza A (H1N1) viruses. The proportion of deaths attributed to pneumonia and influenza (P&I) was below the epidemic threshold. Eleven influenza-associated pediatric deaths were reported and all eleven were associated with 2009 influenza A (H1N1) virus infection. The proportion of outpatient visits for influenza-like illness (ILI) was above the national baseline. Regions 2 through 10 reported ILI above region-specific baseline levels; only Region 1 was below its region-specific baseline. Twenty-seven states reported geographically widespread influenza activity, Guam and 18 states reported regional influenza activity, two states, the District of Columbia, and Puerto Rico reported local influenza activity, one state reported sporadic influenza activity, and the U.S. Virgin Islands and two states did not report. The 2009-10 influenza season officially begins October 4, 2009.

To access the entire CDC weekly surveillance report, visit <http://www.cdc.gov/flu/weekly/fluactivity.htm>

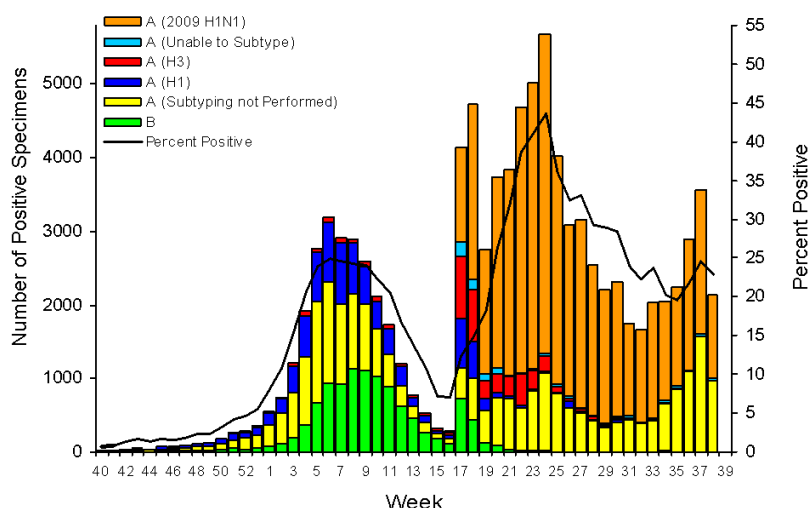
From <http://www.cdc.gov/h1n1flu/updates/us/#totalcases>:

U.S. Influenza and Pneumonia-Associated Hospitalizations and Deaths from Aug 30 – Sep 26, 2009

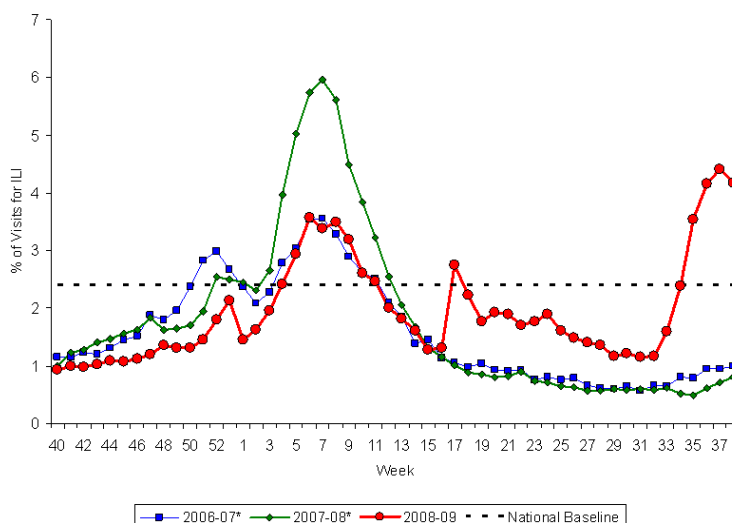
Cases Defined by	Hospitalizations	Deaths
Influenza and Pneumonia Syndrome*	12,863	1,197
Influenza Laboratory-Tests**	3,311	182
Totals:	16,174	1,379

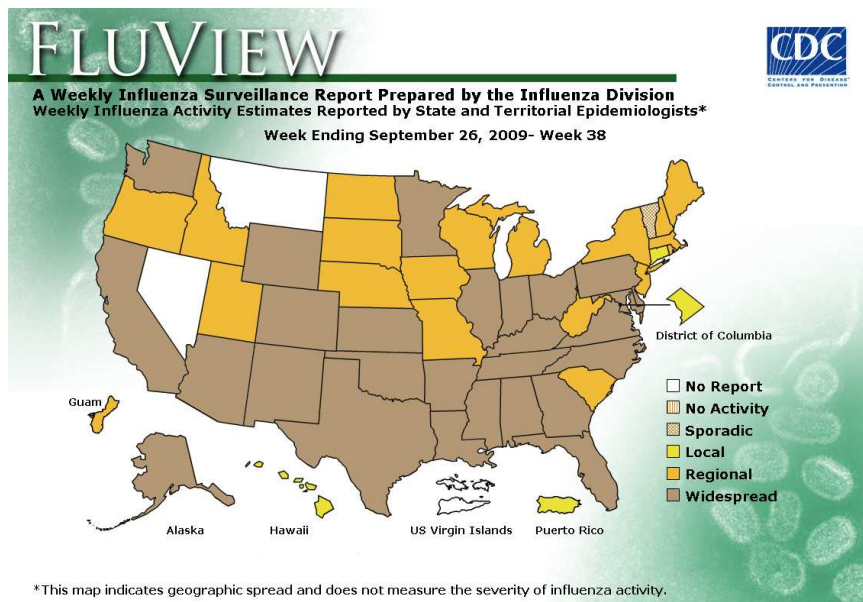
*Reports can be based on syndromic, admission or discharge data, or a combination of data elements that could include laboratory-confirmed and influenza-like illness hospitalizations.
 **Laboratory confirmation includes any positive influenza test (rapid influenza tests, RT-PCR, DFA, IFA, or culture), whether or not typing was done.

Influenza Positive Tests Reported to CDC by U.S. WHO/NREVSS Collaborating Laboratories, National Summary, 2008-09



Percentage of Visits for Influenza-like Illness (ILI) Reported by the US Outpatient Influenza-like Illness Surveillance Network (ILINet), National Summary 2008-09 and Previous Two Seasons





International (WHO, October 2): *This summary provides an updated report of seasonal influenza activity for weeks 36-37 (as of 2 October 2009). Detailed reports of the pandemic influenza A (H1N1) virus activity are available at: [the WHO page for Pandemic \(H1N1\) 2009](#) . This summary does not include reports of avian influenza in humans, which are available at: [the WHO avian influenza page](#) .*

During the weeks 36-37, the pandemic influenza A (H1N1) 2009 virus continued to be the predominant circulating strain of influenza in many countries both in the northern and southern hemisphere. In the northern hemisphere, influenza activity continued to increase in some areas. In North America, the United States of America has reported widespread outbreaks of pandemic influenza A (H1N1) 2009. Localized outbreaks of pandemic influenza A (H1N1) 2009 were reported in some parts of Canada. In Europe, most countries reported low or moderate influenza activity. Local outbreaks were reported by the United Kingdom of Great Britain and Northern Ireland, and the Netherlands while Israel reported widespread activity.

In the tropical regions of the Americas and Asia, pandemic influenza A (H1N1) 2009 influenza activity remained variable. In parts of India, Bangladesh and Cambodia, influenza transmission continued to be active, while countries in South-east Asia such as Indonesia, Singapore and Thailand reported declining transmission. Peru and Mexico have reported an increase in influenza activity. Influenza transmission in the southern hemisphere has largely returned to baseline (Chile, Argentina, and New Zealand) or is continuing to decline (Australia and South Africa).

The level of seasonal influenza activity in most countries was low with only sporadic detections. China continued to report regional outbreaks of H3 with sporadic H1 and B activity.

Sporadic seasonal influenza activity was observed in Australia (H1,H3), Canada (H3), China Hong Kong Special Administrative Region (H3,H1), Côte d'Ivoire (B), Denmark (H3), France - French Guiana (H1,B), Iran (H1), Italy (H1), Kenya (H1,H3,B), Madagascar (H3,B), Poland (H1,B), South Africa (B) and United States of America (H1,H3,B).

Austria, Belgium, Bosnia and Herzegovina, Bulgaria, France - Guadeloupe, Greece, Israel, Italy, Japan, Kazakhstan, Kyrgyzstan, Latvia, Lithuania, Morocco, Romania, Serbia, Slovakia, Slovenia, Sudan, Tunisia and Ukraine reported no seasonal influenza activity.

MDCH reported **REGIONAL INFLUENZA ACTIVITY** to the CDC for the week ending October 3, 2009.

For those interested in additional influenza vaccination and education information, the MDCH *FluBytes* is available at http://www.michigan.gov/mdch/0,1607,7-132-2940_2955_22779_40563-125027--00.html.

Avian and Novel Influenza Activity

WHO Pandemic Phase: Phase 6 – characterized by increased and sustained transmission in the general population. Human to human transmission of an animal or human-animal influenza reassortant virus has caused sustained community level outbreaks in at least two WHO regions.

International, Swine (OIE [edited], September 29): Report type: immediate notification

Start date: 25 Sep 2009

Date of 1st confirmation of the event: 29 Sep 2009

Date submitted to OIE: 29 Sep 2009

Reason for notification: emerging disease

Morbidity: 1.3 per cent; Mortality: 0 per cent

Causal agent: pandemic influenza A/H1N1 virus

New outbreaks

Outbreak 1 (1/2009): Kilworth, Cork

Date of start of the outbreak: 25 Sep 2009

Outbreak status: continuing (or date resolved not provided)

Epidemiological unit: farm

Species: swine

Susceptible: 3050

Cases: 40; Deaths: 0; Destroyed: 0; Slaughtered: 0

Affected population: breeding unit containing 650 sows and 2400 piglets and weaners. 40 dry sows in 2 of 3 sow houses affected.

Total outbreaks: 1

Species: swine

Apparent morbidity rate: 1.31 per cent; Apparent mortality rate: 0.00 per cent; Apparent case fatality rate: 0.00 per cent

Proportion susceptible animals lost*: 0.00 per cent

* Removed from the susceptible population through death, destruction, and/or slaughter

Source of the outbreak(s) or origin of infection: infected farm worker

Epidemiological comments

The pigs were being monitored as high-risk following confirmation of the virus in a worker on 22 Sep 2009. The worker tended the pigs from 15-18 Sep 2009 whilst sick. Clinical signs appeared in the pigs on 25 Sep 2009 with sows off feed and laboured breathing. Movements of pigs off farm have been stopped voluntarily since 18 Sep 2009 in accordance with a Code of Practice previously agreed between Department of Agriculture and stakeholders.

Control measures: no vaccination; no treatment of affected animals.

Laboratory name and type: Central Veterinary Research Laboratory, Backweston, County Kildare (National laboratory)

Species: swine

Test: real-time reverse transcriptase/polymerase chain reaction (RRT-PCR) Test: date 29 Sep 2009

Result: positive

Michigan Wild Bird Surveillance (USDA, as of October 8): For the 2009 testing season (April 1, 2009 - March 31, 2010), HPAI subtype H5N1 has not been recovered from any of the 43 Michigan samples tested to date, including 34 live wild bird and 9 morbidity/mortality specimens. H5N1 HPAI has not been recovered from 9784 bird or environmental samples tested nationwide for the 2009 season. For more information, visit the National HPAI Early Detection Data System at <http://wildlifedisease.nbii.gov/ai/>.

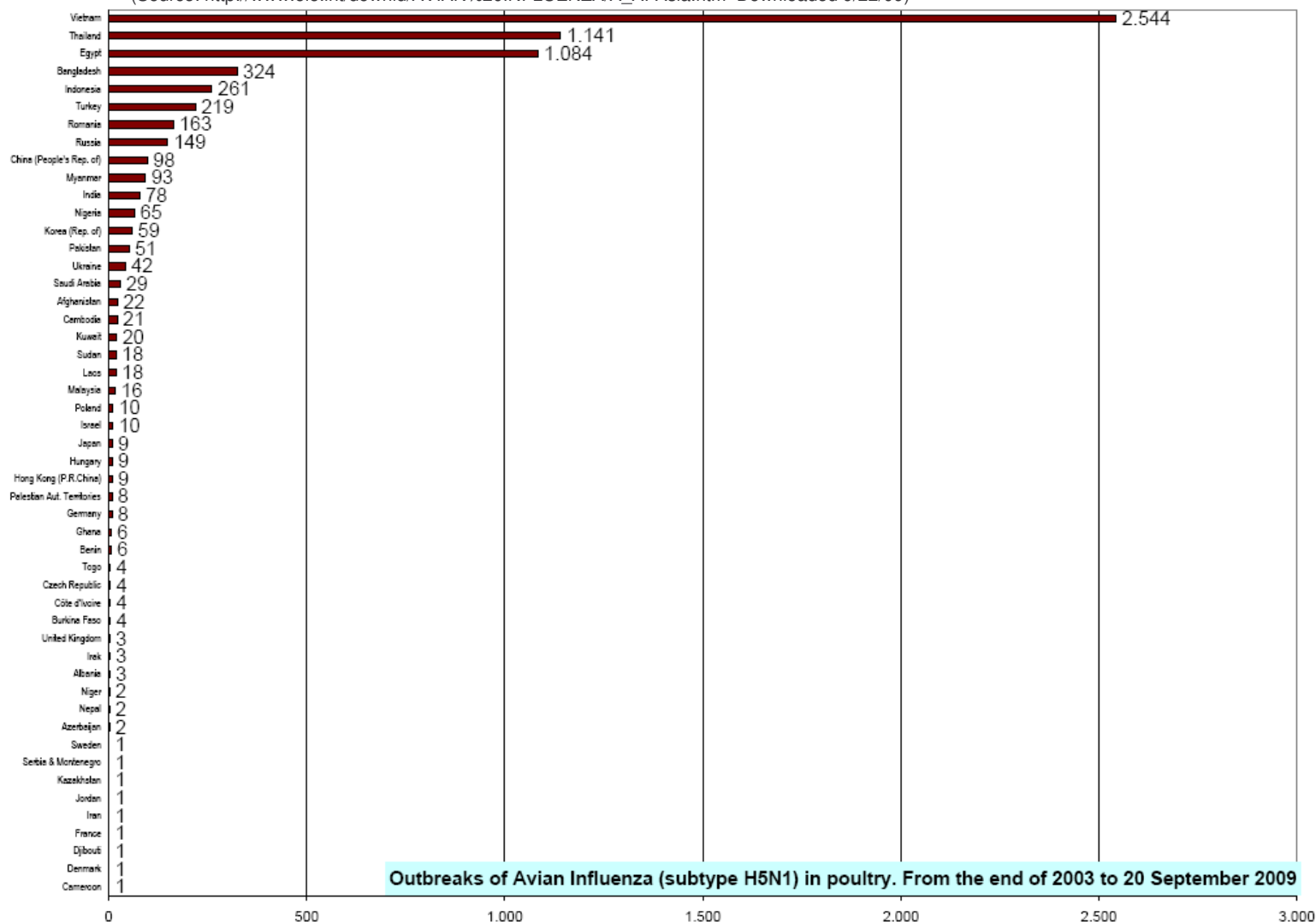
To learn about avian influenza surveillance in Michigan wild birds or to report dead waterfowl, go to Michigan's Emerging Disease website at <http://www.michigan.gov/emergingdiseases>.

Please contact Susan Peters at PetersS1@Michigan.gov with any questions regarding this newsletter or to be added to the weekly electronic mailing list.

Contributors

MDCH Bureau of Epidemiology - Sally Bidol, MPH; Cristi Carlton, MPH; Edward Hartwick, MS

MDCH Bureau of Laboratories – Anthony Muyombwe; Victoria Vavricka

Table 1. H5N1 Influenza in Poultry (Outbreaks up to September 20, 2009)(Source: http://www.oie.int/downld/AVIAN%20INFLUENZA/A_AI-Asia.htm Downloaded 9/22/09)**Table 2. H5N1 Influenza in Humans (Cases up to September 24, 2009)**

(http://www.who.int/csr/disease/avian_influenza/country/cases_table_2009_09_24/en/index.html Downloaded 9/24/2009)

Cumulative number of lab-confirmed human cases reported to WHO. Total number of cases includes deaths.

Country	2003		2004		2005		2006		2007		2008		2009		Total	
	cases	deaths	cases	deaths	cases	deaths	cases	deaths	cases	deaths	cases	deaths	cases	deaths	cases	deaths
Azerbaijan	0	0	0	0	0	0	8	5	0	0	0	0	0	0	8	5
Bangladesh	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0
Cambodia	0	0	0	0	4	4	2	2	1	1	1	0	0	0	8	7
China	1	1	0	0	8	5	13	8	5	3	4	4	7	4	38	25
Djibouti	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0
Egypt	0	0	0	0	0	0	18	10	25	9	8	4	36	4	87	27
Indonesia	0	0	0	0	20	13	55	45	42	37	24	20	0	0	141	115
Iraq	0	0	0	0	0	0	3	2	0	0	0	0	0	0	3	2
Lao People's Democratic Republic	0	0	0	0	0	0	0	0	2	2	0	0	0	0	2	2
Myanmar	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0
Nigeria	0	0	0	0	0	0	0	0	1	1	0	0	0	0	1	1
Pakistan	0	0	0	0	0	0	0	0	3	1	0	0	0	0	3	1
Thailand	0	0	17	12	5	2	3	3	0	0	0	0	0	0	25	17
Turkey	0	0	0	0	0	0	12	4	0	0	0	0	0	0	12	4
Viet Nam	3	3	29	20	61	19	0	0	8	5	6	5	4	4	111	56
Total	4	4	46	32	98	43	115	79	88	59	44	33	47	12	442	262